

## REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow. Claims 12-14 are added. Support for new claims 12-14 may be found in the specification as originally filed, *inter alia*, at page 18, lines 6-8, 19-21 and page 19, line 29 – page 20, line 2. Claims 5-12 are currently pending. Claims 7-11 have been withdrawn from consideration as being drawn to non-elected subject matter. Thus, claims 5-6 and 12-14 are currently pending and under consideration in the application.

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

### Rejection Under 35 U.S.C. § 103 – Seguchi/JP ‘965/Wicks

On page 3 of the Office Action, the PTO has rejected claim 5 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent 5,985,949 to Seguchi *et al.* (hereafter “Seguchi”) in view of Japanese Patent 63-179965 (hereafter “JP ‘965”) and Wicks, Coatings, in *Kirk-Othmer Encyclopedia of Chemical Technology*, Vol. 7, John Wiley & Sons, 2002, p. 90 (hereafter “Wicks”). Applicants traverse this rejection for at least the reasons set forth below.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicants’ disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

Here, Applicants submit that Seguchi, JP ‘965, and Wicks, whether taken individually or in combination, fail to teach or suggest that “(a) a lubricating oil in contact with (b) a thermoplastic resin composition” and “wherein the thermoplastic resin has a surface energy ranging from a first value of [a surface energy of the lubricating oil + 0] N/cm to a second value of [the surface energy of the lubricating oil + 20 x 10<sup>5</sup>] N/cm” as recited in claim 5. For

at least this reason, Applicants submit that the outstanding rejection based upon the combination of Seguchi, JP '965, and Wicks is improper and ought to be withdrawn.

Seguchi discloses “a product having reduced friction and improved abrasion resistance comprises a formed resin containing at least one fluorine-containing polymer which is exposed to ionizing radiation.” Abstract. Seguchi fails to teach the combination of the lubricating oil in contact with the thermoplastic composition.

On page 3 of the Office Action, the PTO asserts that “Seguchi and JP '965 disclose the combination of a lubricating oil and a thermoplastic resin composition of claim 5.” However, JP '965 actually discloses a lubricating oil incorporated into the resin composition “in the range of 3 to 15 weight % in relation to the whole composition.” JP '965, pg. 5, lns. 9-19. This differs significantly from the presently claimed invention where the lubricating oil is “in contact with” the thermoplastic resin composition, not incorporated into the thermoplastic resin composition.

While Wicks discusses wetting between a metal substrate and a permanent coating, Wicks nowhere discusses wetting between a thermoplastic resin and a lubricating oil, and therefore never teaches the presently claimed relationship in surface energy between a thermoplastic resin and a lubricating oil for the purpose of obtaining a good wettability of a lubricating oil to a thermoplastic resin.

Thus, JP '965 and Wicks fail to add anything which would cure the fundamental deficiencies in Seguchi.

With the presently claimed surface energy, the thermoplastic resin exhibits a good wettability for lubricating oil, thereby extending a fluid lubrication region during sliding. Additionally, the claimed surface energy improves the oil film maintainability of the thermoplastic resin, thereby further lowering the frictional resistance. This extension of the fluid lubrication region makes it possible to lower the frictional resistance even under severe sliding conditions. In general, the surface energy of the thermoplastic resin and the friction coefficient are in correlation to each other so that the friction coefficient increases as the surface energy becomes larger. Here, Applicants claimed surface energy range maximizes the reduction in the frictional coefficient observed by Applicants.

Applicants note that objective evidence of nonobviousness must be considered whenever it is present and that this includes comparative data present in the specification.

MPEP §716.01(a)(2<sup>nd</sup> paragraph). In this regard, Applicants wish to direct the PTO's attention to the comparative data set forth and discussed on pages 17-24 of the instant specification.

If an independent claim is nonobvious under § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988). See MPEP 2143.03. Thus, Applicants submit that claim 12, which ultimately depends from independent claim 5, is also non-obvious at least by virtue of their dependency from claim 5.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection of claim 5 under § 103.

#### **Rejection Under 35 U.S.C. § 103 – Yamamoto/Seguchi**

On page 4 of the Office Action, the PTO has rejected claim 6 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent 6,552,099 to Yamamoto *et al.* (hereafter “Yamamoto”) in view of Seguchi. Applicants traverse this rejection for at least the reasons set forth below.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicants' disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

Here, Applicants submit that Yamamoto and Seguchi, whether taken individually or in combination, fail to teach or suggest that “wherein at least a part of the active end groups of the fluoro-resin is chemically bonded with an atom forming part of the thermoplastic” as recited in claim 6. For at least this reason, Applicants submit that the outstanding rejection based upon the combination of Yamamoto and Seguchi is improper and ought to be withdrawn.

Yamamoto fails to teach or suggest applying the heating and vacuum-suction for the purpose of chemically bonding the fluoro-resin with the thermoplastic resin. Yamamoto

actually teaches away from the presently claimed invention. Yamamoto teaches producing a modified fluoro-resin “produced by grafting a functional group-containing organic compound onto the ... crosslinked fluoro-resin by the application of ionizing radiation.” Col. 3, lns. 32-35. The radiation is “applied to the backbone polymer of the fluoro-resin to produce radicals as an origin of grafting” the organic compound. Col. 3, lns. 37-44. This actually teaches away from the presently claimed invention where “at least a part of the active end groups of the fluoro-resin is chemically bonded with an atom forming part of the thermoplastic resin” as required by claim 6. The active end groups of Yamamoto are grafted with the functional group-containing organic compound and are not available to be chemically bonded with an atom forming part of the thermoplastic resin.

If an independent claim is nonobvious under § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988). See MPEP 2143.03. Thus, Applicants submit that claims 13-14, each of which ultimately depends from independent claim 6, are also non-obvious at least by virtue of their dependency from claim 6.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection of claim 6 under § 103.

#### **Newly Added Claims**

Applicants have added new claims 12-14 in this response. New claim 12 is dependent on claim 5 and new claims 13-14 are dependent on claim 6. Applicants respectfully submit that the outstanding rejections under § 103 do not apply to newly added claims 12-14.

Applicants submit that Seguchi, JP ‘965, and Wicks, whether taken individually or in combination, fail to teach or suggest a “thermoplastic resin composition forms a resinous material whose surface is in contact with the lubricating oil such that the resinous material is lubricated with the lubricating oil” as required by claim 12.

Applicants submit that Yamamoto and Seguchi, whether taken individually or in combination, fail to teach or suggest a resinous material “comprising 20 parts per weight of the fluoro-resin and 80 parts per weight of polyamide 66 resin” as required by claim 13. Furthermore, Yamamoto and Seguchi, whether taken individually or in combination, fail to teach or suggest a resinous material “comprising 20 parts per weight of the fluoro-resin and 80 parts per weight of polyamideimide resin” as required by claim 14.

Furthermore, if an independent claim is nonobvious under § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988). See MPEP 2143.03. Thus, Applicants submit that claim 12, which ultimately depends from independent claim 5, is non-obvious at least by virtue of its dependency from claim 5. Furthermore, Applicants submit that claims 13-14, each of which ultimately depends from independent claim 6, are also non-obvious at least by virtue of their dependency from claim 6.

### CONCLUSION

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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By  \_\_\_\_\_

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